

MISCELLANEOUS NOTES AND RECORDS OF DRAGONFLIES (*ODONATA*).

BY RICHARD A. MUTTKOWSKI.

The following notes are based chiefly on a collection of dragonflies in the Museum of the Brooklyn Institute of Arts and Sciences, recently sent to me for determination. Other records are taken from specimens in the collections of the Milwaukee Public Museum.

The main interest of the records attaches to the commingling of Western and Eastern species in Utah and Arizona. At best the collections of *Odonata* from the Rocky Mountain States have been few and those of the dilatory order. One of the most extensive is that by Prof. F. H. Snow (deceased) for the Snow collections in Kansas University, from which I have received a number of specimens here cited.

Specimens in the Brooklyn Institute are designated by the parenthesized (Brooklyn). Similarly specimens collected by Prof. Snow and others, which are now in the Milwaukee Public Museum.

LESTINÆ.

Archilestes grandis Rambur. One female, Utah (Brooklyn).

CENAGRIONINÆ.

Hyponeura lugens Hagen. Four Males, Oak Creek Canon, Ariz., 6,000 ft. (Snow). Three males, Los Angeles Co., Calif., July, and one female, August.

Argia mæsta Hagen. Four males, Utah (Brooklyn).

Enallagma doubledayi Selys. Three males and two females, Florida (Brooklyn).

Enallagma anna Williamson. Three males; two from Utah and one from Arizona (Brooklyn).

Enallagma prævarum Hagen. Two males, Manitou Park and Colorado Springs, Colo., August (Snow). Three males, Pasadena, Calif., August.

Table of the species of **Ischnura** Charpentier.

The following includes all North American species, but refers only to the males:

1. Antehumeral green stripe present (a superior spot and inferior stripe in *posita*)..... 2
Antehumeral green stripe indicated by superior and inferior spots 12
No trace of green antehumeral stripe.....**denticollis**
2. Abd. segment 9 black on dorsum..... 3
Abd. segment 9 with blue on dorsum..... 4
3. Abd. segment 8 blue, antehumeral stripe complete.....**ramburi**
Abd. segment 8 bronze black, antehumeral stripe like an inverted**posita**
4. Abd. segment 9 entirely blue (occasionally in *verticalis*).... 5
Abd. segment 9 with lateral black stripes or spots..... 9
5. Abd. segment 10 with a dorsal bifid process..... 6
Abd. segment 10 with cylindrical, entire process..... 8
6. Abd. segment 8 entirely blue..... 7
Abd. segment 8 with lateral black markings.....**demorsa**
7. Superior appendages decurved, one-half the length of 10, with an acute, curved apical process; inferiors nearly the length of 10, with an outer, acute process.....**barberi**
Superior appendage apparently consisting (in lateral view) of a small rounded lobe one-fourth the length of 10, in rear view a short acute process extending obliquely downward and inward; inferiors one-half the length of 10, an outer acute process with the tip deflected inwardly....**utahensis** n. sp.
8. Abdomen brassy green, markings pale green.....**prognatha**
Abdomen bronze black, markings blue.....**kellicotti**
9. Abd. segment 8 with lateral black markings..... 10
Abd. segment 8 entirely blue.....**credula**
10. Process of inferior appendage not bifid at apex..... 11
Process of inferior appendage bifid or trifid at apex.....**perparva**
11. Inferior appendage much longer than superior, cylindrical, notched at tip; superior appendage with slender, straight prolongation**erratica**
Inferior appendage hardly longer than superior, a rectangular superior basal lobe; not notched at the apex; superior appendage with decurved prolongation.....**verticalis**

I. prognatha should fall under 6 with *demorsa*. Until recently this species was known to me only through a broken male, and I accepted Hagen's description of the process on 10 as "cylindrical" for this table. However, from several specimens sent me by Mr. Williamson, I find that the process is bifid, though narrowly so, in its apical sixth.

12. Bifid process on 10 as high as 10, forked in apical half.....**cervula**
 Bifid process on 10 one-fourth as high as 10, forked in less
 than apical half.....**damula**

***Ischnura utahensis* n. sp.**

Male—Black, without metallic lustre, orange and blue.

Labium and labrum yellow, rhinarium pale green, nasus dark metallic green, frons orange, vertex black, ocelli brown, occipital spots large and green, the narrow stripe between them interrupted at one-third. Eyes green (type), head yellow in rear.

Prothorax with anterior lobe black above, margined with green. Median lobe green. Posterior lobe black, margined with green; at the anterior edge a narrow black line is given off at the lateral fourth which crosses the median lobe and extends slightly beyond the base of the anterior lobe. Posterior margin regularly convex, the black at the side being obtusely excavated.

Thorax with a broad black dorsal stripe, a green antehumeral stripe one-half as wide, a black humeral of equal width, which is narrowed above and below. Sides green, a very fine black line at the upper third of the second suture (one specimen with a similar one the first suture). Paler green beneath. Legs yellow, femora and tibiae with a black external line, the line strongest on the anterior tibiae, barely indicated on the posterior ones; tarsal joints ringed with black, apical half of claws black; all spines of the legs black.

Abdomen: segment one green, two small median twin spots on dorsum; two black above, the stripe wide at the base, narrowing gradually to apical fourth, then widening broadly to the apex, where the black extends half way down the sides, which are green; segment three to six black on dorsum, the stripe narrow, except on the apical fourth where it is broad and cup-shaped, narrowing to a point basally and at the apical fourth, but interrupted only at the base; segment seven with the black stripe extending half way down the sides; sides of three to seven orange, except the base of three, which is green; segment eight and nine entirely blue; ten black above, blue on the sides below.

Forked elevation on segment ten hardly half as high as ten, rising gradually from the base, forked in less than apical half, forming a right angle, the branches acute at the apex. Superior appendages hardly one-fourth as long as ten, in lateral view showing as a small

rounded lobe, in rear view an acute process which is directed obliquely downward and inward, the process black at the tip and imbedded in the base. Inferior hardly one-half the length of ten, wide at base, then cylindrical, the apex acute and curved inward; color yellow, except at the tips, which are brown.

Wings clear. Fore wings with 7-9 postcubitals (7 only in the type), hind wings with 6-7 (6 in the type only). Vein M_2 arising a trifle before or at the fourth postcubital in all fore wings, at the third in five hind wings (between the third and fourth in the right hind wing of the type). Pterostigma of fore wing black, white in



Fig. 1. Appendages of *Ischnura utahensis* n. sp., lateral view.

the distal corner; lighter and brown, surrounded with white in the hind wings.

Female unknown.

Length of abdomen 26-27 mm., hind wing 16-18 mm.

Described from holotype and one paratype in the Brooklyn Museum and one paratype in the Milwaukee Public Museum, all three males from Utah (Brooklyn). Specific locality not indicated.

The species is almost identical in markings with *Ischnura barberi* Currie and differs chiefly in the form of appendages and the general size.

Ischnura credula Hagen. Two males and two females. Galveston, Texas, May, (Snow).

Ischnura cervula Selys. Four males and two females. Los Angeles, Co., Calif., August and September.

But one of the males has the superior process of segment 10 as high as the segment. On the others it is considerably less, on one scarcely one-half the height of ten.

Chromagrion conditum Hagen. Two males, one from Kentucky, the other from Lakehurst, N. J., May (Brooklyn).

CORDULEGASTERINÆ.

Cordulegaster diadema Selys. Four males, Oak Creek Canon, Ariz., July and August (Snow).

Cordulegaster dorsalis Hagen. Six males, Los Angeles Co., Calif., and one female, San Marino Co., Calif., (Grinnell).

In bulk the female appears larger than the males. In fact, it much resembles *C. diadema*. The vulgar lamina form a narrow trough about four times the length of segment ten.

Cordulegaster erroneus Hagen. One female, Lake City, Florida.

Vulvars about three times the length of segment ten.

GOMPHINÆ.

Negomphoides. Aphylla and **Cyclophylla**.

Dr. Calvert holds that these three genera cannot be differentiated. In accordance with his view the new name *Negomphoides* Mutt. for *Gomphoides* Selys must be suppressed and *Cyclophylla* take its place.

Hagenius brevistylus Selys. One male, Lava, Sull. Co., N. Y., (Brooklyn).

AESHINÆ.

Gomphæschna furcillata Say. One male and one female from Ramapo Mountains, New York, June and one female from Lakehurst, N. J., May (Brooklyn).

The species also occurs in Florida. I have one female from Lake City, Fla.

Aeshna palmata Hagen. One male, British Columbia (Brooklyn).

Aeshna umbrosa Walker. One male, Saquenay River, Prov. Quebec, July, and one male labelled Calif., (Brooklyn).

Aeshna multicolor Hagen. One male, Utah (Brooklyn).

Aeshna verticalis Hagen. One male, Florida (Brooklyn).

MACROMIINÆ.

Didymops transversa Say. Two males, Turkey Lake, Fla., March.

CORDULIINÆ.

Neurocordulia obsoleta clara n. subsp.

Female—Pale olive brown, markings yellow and brown.

Face olive brown, labrum and front anteriorly yellow, vertex and occiput olive brown, the latter with central indeterminate yellow markings. Eyes margined with yellow behind.

Thorax olive, clothed thickly with fine white hairs, which are longer at the anterior edge of the dorsum. Dorsal carina yellow, with a broad brown stripe on each side covering half the distance to the humeral suture; this stripe is somewhat obscure, though distinct, and sends off a narrow acute process at its upper end to the humeral suture. Sides of thorax olive, an elongated yellow spot on the lower half of the first lateral suture, a triangular spot above below the fore wings and a quadrangular spot at the front edge of the hind wings, both yellow. Above with yellow spots at the bases of all wings. Legs olive, the carinas yellow, these markings, however, not very distinct. Spines of the legs and tips of the tarsal claws brown.

Abdomen: segments one and two and basal half of three olive, two with a latero-inferior basal yellow spot, three with a very narrow yellow nasal ring. The remaining segments are obscure brown, though there are indications of lateral yellow oblong spots on segments three to nine. Appendages as long as nine plus ten, yellow at the basal third, then obscure brown. Vulvar lamina very short, hardly one-tenth the length of nine, rectangularly excised, lateral lobes broadly rounded.

Wings hyaline, the venation brown, yellow near the costa. At the extreme base the wings are blackish in the costal, subcostal and median space. Four basal subcostal antecubitals with a small brown spot surrounding each, the spots not larger than one-sixth of the space between the cross-veins; fifth and sixth antecubitals (subcostal) very narrowly margined with brown. Nodal spot very small, consisting of a narrow internal subcostal streak and a similar narrow post-nodal streak. Hind wings similarly marked, with the spots one-third larger. Stigma of all wings brown, membranules white, black at the apical third. Venation:

Fore Wings.	Left Wing.	Right Wing.
Costal antenodals.....	9	8
Subcostal antenodals	7	8
Postnodals	10	9
Triangle	3-celled	3-celled
Subtriangle	3-celled	3-celled
Post-triangular series.....	3-2-3-rows	4-2-3-rows
Cubitals	3	3

Hind Wings.

Costal antenodals.....	5	5
Subcostal antenodals.....	5	6
Postnodals	10	8
Cubitals	2	2
Triangle	2-celled	2-celled
Post-triangular series.....	3	3
Apex on loop resting on.....	1 cell	1 cell

It is worthy of note, that there is a cross-vein in the hyper-triangular space in the left fore wing.

Length of abdomen (excl. app.) 35 mm., appendages 25 mm., hind wings 38 mm.

Described from one female labelled Alabama in the Brooklyn Institute. Holotype bearing "Accession No. 11146."

The entire absence of anal spots on all wings will distinguish this species from other *Neurocordulia*. There is not the slightest trace of the anal spots as found in *N. obsoleta* and *yamas-karensis*.

Somatochlora minor Calvert. One male, Saquenay River, Prov. Quebec, July (Brooklyn).

Somatochlora cingulata Selys. One male, Saquenay River, Prov. Quebec, July (Brooklyn).

The appendages of this species have never been figured. In lateral view they appear almost identical with those figured by Williamson for *albicincta* Burmeister. In dorsal view they are likewise similar, except for the acute external basal spine of the superior appendages.

Somatochlora provocans Calvert. Ent. News, 14, p. 39, 1903; male described.

Female (hitherto undescribed)—Dull metallic green, markings yellow.

Face chiefly yellow. Labrum black, the oblique margins of the nasus with a narrow black stripe, which do not touch the frons, their upper ends being one millimeter apart. Frons above and a very little in front very dark metallic green, with a violet tinge. Vertex similar, occiput and back of head black.

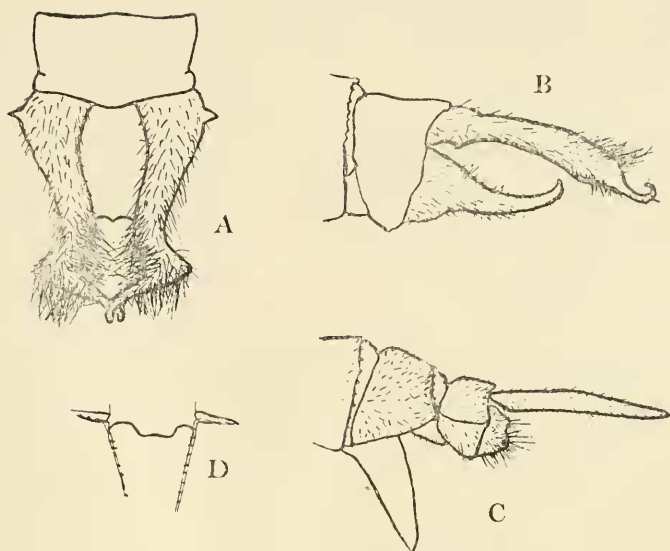


Fig. 2. A, B, appendages of *Sumatochlora cingulata*: A, dorsal view, B, lateral view; C, apical segments of *Sumatochlora provocans*, female; D, vulvar scale of *Neurocordulia obsolita clara* n. subsp.

Thorax metallic green, covered with fine white hair, which are thicker and longer on the dorsum. Sides with a rather broad anterior stripe and a smaller metapimeral stripe, which does not reach the metasternum. Yellow between the wings on dorsum. Legs with coxæ and trochanter obscure yellow or brown, fore femora brown beneath, middle femora at base; otherwise black.

Abdomen dark metallic green, an apical dorsal line on one, an oblique latero-inferior triangular stripe on two, yellow; the stripe occupies the basal half, and widens toward the apex of the segment; segment three with a basal ring of yellow, which is interrupted dorsally, and two latero-dorsal triangular basal spots, yellow.

Appendages longer than nine plus ten, straight and acute. Vulvar lamina forming a trough protruding at right angles from the venter, longer than the height of nine.

Wings hyaline, tinged throughout with yellow, the yellow more pronounced in the costal regions of all wings; also intense streaks in the

subcostal and cubital spaces of the fore wings and the subcostal spaces of the hind wings. Venation:

Fore Wings.	Left Wing.	Right Wing.
Costal antenodals	9	8
Subcostal antenodals	8	8
Postnodals	5	6
Triangle	3-celled	2-celled
Post-triangular series	3-2-3-rows	3-2-3-rows
Hind Wings.		
Costal antenodals.....	6	5
Subcostal antenodals.....	6	5
Postnodals	7	6
Post-triangular series broken, with batches of very minute cells.		

Abdomen (excl. appendages) 42 mm., appendages 4 mm., vulvar lamina 3 mm. Hind wings 37 mm., stigma 2.5 mm., hind femora 8 mm.

Described from one female from White Mills., Pa., captured in August (Brooklyn). Allotype in Brooklyn Institute.

The species is close to *tenebrosa*, *filosa* and *linearis*. From the latter it is distinguished by the markings of the abdomen. From *tenebrosa* it can be separated by the longer appendages and the form of the vulvar lamina. These are much like those figured by Martin for *S. filosa* (Cat. Coll. Selys, 9, p. 22, 1908; t. f. 20). Of Martin's figure, however, it must be said that it does not agree with the descriptions of the vulvars "forming a recurved trough reaching the tip of the abdomen," as attested by Needham's figure on page 500 of the Adirondack report (1901). If such be the case, there is the probability of Martin's specimen being a female of *S. provocans*: I have seen a male of *S. filosa* from Lake City, Fla.

LIBELLULINÆ.

Libellula auripennis Burmeister. One male, Florida (Brooklyn).

This specimen has the wings more intensely amber-colored than any that I have ever seen. This coloration is especially strong in the apical half of the wings. Stigma on all wings bright red.

Libellula flavida Rambur. One male, Lakehurst, N. J., June (Brooklyn).

Libellula saturata Uhler. Los Angeles Co., Calif., August; eight males, one female.

Libellula incesta Hagen. One male, Mississippi.

Plathemis subornata Hagen. Two males, two females, Clark Co., Kansas, May (Snow).

Erythrodiplax berenice Drury. Two males and two females, Galveston, Texas, May (Snow).

Sympetrum obtrusum Hagen. One male, Utah (Brooklyn).

Sympetrum scotium Donovan. One male, California (Brooklyn).

Sympetrum madidum Hagen. One male, California (Brooklyn).

Sympetrum corruptum Hagen. One male, Utah (Brooklyn).

Sympetrum semicinctum Say. One male, White Mills, Pa., August (Brooklyn).

This species occurs also in Wisconsin. I have several specimens from Chippewa Falls (Howieson).

Paltothemis lineatipes Karsch. One male, Huachuca Mountains, Ariz., (Brooklyn). Three males and two females, Los Angeles Co., June and July. Two males and two females, Baboquivaria Mountains, Ariz., (Snow).

Orthemis ferruginea Fabricius. Male and female, Bill Williams Fork, Ariz., July and two males, Brownsville, Texas (Snow). One male, Guyaquil, Ecuador (Campos).

Pseudoleon superbus Hagen. Two males and two females, Baboquivaria Mountains, Ariz., (Snow).

Milwaukee Public Museum,

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